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Converse Consultants

**Report of
SEDIMENT SAMPLING
and
HEAVY METALS ANALYSIS
PRICKETTS POND
Old Bridge Township, New Jersey**

**For
MADISON INDUSTRIES, INC.**

April 1984

510147



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1.0 INTRODUCTION

The purposes of the present investigation were to measure the degree and extent of contamination of the sediments in Pricketts Pond caused by heavy metals and volatile organic chemicals, and, subsequently, to evaluate whether it would be more cost-effective to excavate contaminated sediments for off-site disposal or to flush contamination from the sediments by groundwater pumping as part of the planned site and aquifer decontamination program.

This report contains the findings of the sediment investigation with respect to the presence of heavy metals. A sister report prepared by Wehran Engineering contains the findings with respect to the presence of volatile organic priority pollutants.

Previous investigations of contamination were conducted by AdTek Engineering in 1974-75 (Reference 1) and by Dames & Moore in 1980 (Reference 2). AdTek concluded that the "sediments in Pricketts Brook and Pond are dangerously contaminated with extremely high concentrations of lead and zinc" and estimated "the existence of literally thousands of pounds of zinc and other heavy metals in the sediments of Pricketts Pond." Dames & Moore estimated "the accumulation of 50,000 pounds of zinc in the bottom of the pond." This was based on assuming that the pond dimensions were 1,000 feet by 200 feet, that the contaminated sediments are 1 foot thick, have an average zinc concentration of 3,000 ppm and a weight of 80 pounds per 1 cubic foot of sediment.

The cost to dredge and dispose of the sediments was estimated to be \$585,000.

Subsequent sediment analyses strongly suggested that the previously reported degree and extent of contamination was not correct and that sediment excavation may not be required. Accordingly, a sediment sampling and analysis protocol to obtain adequate data on

which to base a remedial program was developed jointly by Wehran Engineering, Converse Consultants and NJDEP. The protocol, together with NJDEP's letter of concurrence with the program, are attached.

After several delays due to lack of availability of equipment and bad weather conditions, the program was initiated on March 5, 1984, and the first sample recovered on March 8, 1984.

2.0 SAMPLING PROGRAM

The pond sediments were sampled at 15 locations, as shown on Drawing 1, Boring Location Plan. Five of these borings were located downstream of the proposed slurry wall and ten were located upstream where the highest level of contamination would be anticipated. A boring, B-18, was added to the program in the field at the request of NJDEP to obtain samples of the deltaic sediments which have accumulated at the mouth of Pricketts Brook. Samples were also collected from two locations within the streambed between Pricketts Pond and Madison Industries and from two locations within the streambed upstream of both CPS and Madison as shown on Drawing 2, Boring Location Plan.

Borings located in the pond were accessed by means of a barrel float on which rotary drilling equipment was mounted. A second barrel float was used to carry wash water, steam jenny and other supplies.

The sampling locations were established in the field by line of sight and markers, and referenced to the topographical plan prepared by NJDEP entitled, "Preliminary Design Plans for Remedial and Containment Measures at the sites of CPS Chemical Co. and Madison Industries, Inc.," scale 1"=100', sheet 68 of 68, dated 2/9/83.

At each boring location in the pond, the pH of the water was checked and the depth of water and thickness of soft sediment was measured by pushing a 1/4" steel rod into the bottom. Borings ranged from 3 to 9 feet in depth (as measured from the bottom of the pond) in order to sample the full thickness of sediment at each location.

Several minutes were allowed to elapse before retrieving each sample tube to allow friction to develop between the soil and the sides of the tube. Sample recovery ranged from 50% to 100% and

averaged 76%. A significant part of the "loss" is believed to be due to compaction or densification of the soil as the sampler was advanced.

The soil from each tube was extruded onto a clean plastic sheet and split into 6-inch increments. Each fraction was split lengthways for distribution among Wehren Engineering, Converse Consultants, and NJDEP. Each portion was promptly placed in an appropriate sample container and labeled for delivery to the testing laboratory under chain of custody procedures.

Depending on the sample recovery, penetration resistance, and nature of the soils encountered, a decision was made at each location whether the full thickness of sediment had been penetrated or if a deeper sample was needed. In the latter case, steel casing was set in the hole and cleaned out using potable water. A Shelby tube or split-spoon sampler was then used to obtain the deeper sample depending on conditions.

Samples from the streambed of Pricketts Brook were recovered by driving a Shelby tube by hand by means of a 40-pound hammer attached to a drive head and drive rod.

Shelby tubes were cleaned between samples using a steam jenny followed by a methanol rinse and then a distilled water rinse. In some cases, steam cleaning was omitted because of field conditions and extra care was taken to clean the sampling tubes with methanol. Adequate precautions were taken to avoid cross contamination.

3.0 SUBSURFACE CONDITIONS

The depth of water in the pond at the sampling locations ranged from 1 to 8 feet. A somewhat deeper channel runs approximately parallel to the bank along the western side of the pond.

Individual boring logs are attached. The general stratigraphy encountered at the sampling locations in the pond consisted of the following:

- Stratum 1 - At the surface of the pond bottom, a layer of black organic SILT, at some locations mixed with sand; generally less than 1.0 foot thick. In boring B-1, organic silt and peat extends to about 5.5 feet below pond bottom. Only the upper foot was soft and appeared to be newly deposited, the lower portion was comparatively stiff.
- Stratum 2 - Brown and gray SAND, this stratum was generally encountered in the borings in the southern half of the pond.
- Stratum 3 - Brown sandy GRAVEL and gravelly SAND; this stratum was generally encountered directly underlying Stratum 1 in the borings located in the northern third of the pond, and varied from three inches to about one foot in thickness.
- Stratum 4 - Gray SAND with occasional laminations (seams) of silty CLAY, often orange brown staining of sand on both sides of clay; generally found only in sampling locations in northern half of pond.

The subsurface stratigraphy at the sampling locations along the brook often included the above strata; however, stratigraphy could

not be generalized and therefore the individual boring logs should be consulted.

The surficial sediment (Stratum 1) represents the most recent deposit and was found at all boring locations in the pond. The underlying sandy gravel or gravelly sand layer (Stratum 3) in the upstream one-third of the pond and the upper one to two feet of the brown and gray sand (Stratum 2), which underlies the organic silt in the lower two-thirds of the pond are also believed to represent sediments deposited after the pond had been dredged. The combined thickness of recent sediment in the pond, therefore, ranges typically from 1 to 3 feet. A thickness of 5 feet was found at one location near the mouth of Pricketts Brook, and a possible thickness of 5-1/2 feet occurs at the extreme downstream end of the pond.

The generally gray sand containing thin partings or laminations of clay (Stratum 4), encountered beneath the sediments in the upstream half of the pond, and most of the brown and gray sand, underlying the sediments in the downstream half of the pond (Stratum 2), are believed to represent the original strata found exposed in the excavated sides of the pond.

The boring logs indicate the depths which were sampled at each location and the partitioning of the samples into approximately 6-inch sections for analytical purposes. Successive sections within an individual sample tube were labeled sequentially A, B, C, etc., as shown on the logs. Each section of sample was labeled with the boring number, sample tube number and sequence number for identification purposes.

4.0 LABORATORY ANALYSIS

Alternate six-inch increments of sample (A, C, E, etc.) were analyzed by EP Toxicity Test procedures for Cadmium, Lead, Zinc and Copper. The standard test pH of 5.0 ± 0.2 was used as all pH values measured in the field were greater than 5.0. The EP test is described in the May 19, 1980 Federal Register, Volume 45, No. 98, pp 33127 - 33128, attached. A pressure filter was used in the separation.

All analyses were performed by direct aspiration atomic absorption spectroscopy (Model IL-751) with standard addition for quantification of species concentration. Method detection limits are Cadmium, 0.01 mg/l; Lead, 0.05 mg/l; Zinc, 0.01 mg/l; and Copper 0.05 mg/l.

A total of 180 samples was submitted to the laboratory and 90 of them were tested. The intervening samples were set aside for supplementary analysis if needed.

The laboratory test results together with the QC data and chain of custody records are attached.

5.0 RESULTS

The EP Toxicity test was established by EPA to model as closely as possible the leachability of heavy metals such as Lead, Cadmium, etc. from waste materials.

Toxic concentration thresholds for these constituents have been established to define a hazardous waste based upon the extract concentrations measured in the laboratory (40 CFR 261.24(b), Table 1). These threshold concentrations are set at 100 times the National Interim Primary Drinking Water Standards (DWS) for these substances, i.e. Cadmium, 1.0 mg/l; and Lead 5.0 mg/l. By extrapolation to the Secondary Drinking Water Regulations, the threshold concentrations for Copper and Zinc are 100 mg/l and 500 mg/l, respectively.

Zinc was found at or above the detection level in all 90 samples tested. The maximum concentration was 41 mg/l measured at Boring 9.

Copper was found in 28 of the samples. The maximum concentration measured 1.6 mg/l at Boring 6.

Cadmium was found in 8 of the samples. The maximum concentration measured 0.42 mg/l at Boring 12.

Lead was found in only two samples. The maximum concentration measured 0.06 mg/l at Boring 8.

TABLE 1				
	Zinc	Copper	Cadmium	Lead
DWS	5	1	0.01	0.05
Maximum Found Concentration	41 mg/l	1.6 mg/l	0.42 mg/l	0.06 mg/l
Toxic Concentration Threshold	500 mg/l	100 mg/l	1.0 mg/l	5.0 mg/l

In general, the highest measured Zinc value at a single location in the pond was found in the uppermost sample. In two places, Borings 11 and 15, the second sample from a depth of 12 to 18 inches showed a higher Zinc level than the surficial sample.

6.0 CONCLUSIONS

The investigation leads to the conclusion that, by definition, none of the sediment is "hazardous." Residual levels of low grade contamination may be ascribed to the upper 1 to 2 feet of sediment. As suggested by Wehran Engineering (Reference 3) in connection with the distribution of organic chemicals, a significant proportion of the values reported by the laboratory may be due to the slightly contaminated pore water (groundwater) incorporated into the samples.

No reason can be found for further consideration of dredging and off-site disposal of the sediments in Pricketts Pond or along Pricketts Brook. Any residual and leachable heavy metal contamination will be removed by the proposed aquifer decontamination pumping which is a major part of the planned site clean-up program.

REFERENCES

1. AdTek Engineering Report, March 1975, Study of Groundwater and Surface Water Pollution in the Pricketts Brook Watershed.
2. Dames & Moore, August 1980, Investigation for the New Jersey Superior Court on "Feasibility and Advisability of Containment and Removal of Contaminated Groundwater and Soils in the Pricketts Brook Watershed, Middlesex County, and if Feasible and Advisable, Recommended Methods for Accomplishing Such Objectives,"
3. Wehran Engineering, April 1984, Investigation of the Extent and Distribution of Volatile Organic Priority Pollutants in the Sediments of Prickett's Pond"

Hazardous Waste No.	Substance
U221	Toluene diisocyanate
U224	Toxaphene
	2,4,5-TP see U233
U225	Tribromomethane
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
U228	Trichloroethylene
	Trichloroethylene see U228
U229	Trichlorofluoromethane
U230	2,4,5-Trichlorophenol
U231	2,4,6-Trichlorophenol
U232	2,4,5-Trichlorophenoxyacetic acid
U233	2,4,5-Trichlorophenylpropionic acid alpha, alpha, alpha-Trichlorotoluene see U223
	TRI-CLENE see U228
U234	Trinitrobenzene (R,T)
U235	Tris(2,3-dibromopropyl) phosphate
U236	Trypan blue
U237	Uracil mustard
U238	Urethane
	Vinyl chloride see U043
	Vinylidene chloride see U078
U239	Xylene

* The Agency included those trade names of which it was aware; an omission of a trade name does not imply that it is not hazardous. The material is hazardous if it is listed under its generic name.

Appendix I—Representative Sampling Methods

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the Agency to be representative of the waste.

Extremely viscous liquid—ASTM Standard D140-70 Crushed or powdered material—ASTM Standard D346-75 Soil or rock-like material—ASTM Standard D420-69 Soil-like material—ASTM Standard D1452-65 Fly Ash-like material—ASTM Standard D2234-76 [ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, PA 19103]

Consolidated liquid wastes—"COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460. [Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 28 W. St. Clair St., Cincinnati, Ohio 45268]

Liquid waste in pits, ponds, lagoons, and similar reservoirs—"Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."

This manual also contains additional information on application of these protocols.

* These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA 600/2-80-018, January 1980.

Appendix II—EP Toxicity Test Procedure

A. Extraction Procedure (EP)

1. A representative sample of the waste to be tested (minimum size 100 grams) should be obtained using the methods specified in Appendix I for any other methods capable of yielding a representative sample within the meaning of Part 290. [For detailed guidance on conducting the various aspects of the EP see "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency Office of Solid Waste, Washington, D.C. 20460.]

2. The sample should be separated into its component liquid and solid phases using the method described in "Separation Procedure" below. If the solid residue² obtained using this method totals less than 0.5% of the original weight of the waste, the residue can be discarded and the operator should treat the liquid phase as the extract and proceed immediately to Step 8.

3. The solid material obtained from the Separation Procedure should be evaluated for its particle size. If the solid material has a surface area per gram of material equal to, or greater than, 3.1 cm² or passes through a 9.5 mm (0.375 inch) standard sieve, the operator should proceed to Step 4. If the surface area is smaller or the particle size larger than specified above, the solid material should be prepared for extraction by crushing, cutting or grinding the material so that it passes through a 9.5 mm (0.375 inch) sieve or, if the material is in a single piece, by subjecting the material to the "Structural Integrity Procedure" described below.

4. The solid material obtained in Step 3 should be weighed and placed in an extractor with 16 times its weight of deionized water. Do not allow the material to dry prior to weighing. For purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continuously

¹ Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 28 W. St. Clair Street, Cincinnati, Ohio 45268.

² The percent solids is determined by drying the filter pad at 80° C until it reaches constant weight and then calculating the percent solids using the following equation:

$$\frac{(\text{weight of pad} + \text{solid}) - (\text{tare weight of pad})}{\text{initial weight of sample}} \times 100 = \% \text{ solids}$$

brought into contact with well mixed extraction fluid.

5. After the solid material and deionized water are placed in the extractor, the operator should begin agitation and measure the pH of the solution in the extractor. If the pH is greater than 5.0, the pH of the solution should be decreased to 5.0 ± 0.2 by adding 0.5 N acetic acid. If the pH is equal to or less than 5.0, no acetic acid should be added. The pH of the solution should be monitored, as described below, during the course of the extraction and if the pH rises above 5.2, 0.5N acetic acid should be added to bring the pH down to 5.0 ± 0.2 . However, in no event shall the aggregate amount of acid added to the solution exceed 4 ml of acid per gram of solid. The mixture should be agitated for 24 hours and maintained at 20°–40° C (68°–104° F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45-A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123 or its equivalent, in conjunction with a metering pump and reservoir of 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed:

(a) A pH meter should be calibrated in accordance with the manufacturer's specifications.

(b) The pH of the solution should be checked and, if necessary, 0.5N acetic acid should be manually added to the extractor until the pH reaches 5.0 ± 0.2 . The pH of the solution should be adjusted at 15, 30 and 60 minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5N pH units.

(c) The adjustment procedure should be continued for at least 6 hours.

(d) If at the end of the 24-hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (4 ml per gram of solids) has not been added, the pH should be adjusted to 5.0 ± 0.2 and the extraction continued for an additional four hours, during which the pH should be adjusted at one hour intervals.

6. At the end of the 24 hour extraction period, deionized water should be added to the extractor in an amount determined by the following equation:

$$V = (20)(W) - 16(W) - A$$

V = ml deionized water to be added
W = weight in grams of solid charged to extractor
A = ml of 0.5N acetic acid added during extraction

7. The material in the extractor should be separated into its component liquid and solid phases as described under "Separation Procedure."

8. The liquids resulting from Steps 2 and 7 should be combined. This

combined liquid (or the waste itself if it has less than 1/2 percent solids, as noted in Step 2) is the extract and should be analyzed for the presence of any of the contaminants specified in Table I of § 261.24 using the Analytical Procedures designated below:

Separation Procedure

Equipment: A filter holder, designed for filtration media having a nominal pore size of 0.45 micrometers and capable of applying a 5.3 kg/cm² (75 psi) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing nonabsorptive solids, where separation can be affected without imposing a 5.3 kg/cm² pressure differential, vacuum filters employing a 0.45 micrometers filter media can be used. (For further guidance on filtration equipment or procedures see "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.")

Procedure:

(i) Following manufacturer's directions, the filter unit should be assembled with a filter bed consisting of a 0.45 micrometer filter membrane. For difficult or slow to filter mixtures a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micrometer membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) can be used.

(ii) The waste should be poured into the filtration unit.

(iii) The reservoir should be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter should be immediately lowered to 10-15 psig. Filtration should be continued until liquid flow ceases.

(iv) The pressure should be increased stepwise in 10 psi increments to 75 psig and filtration continued until flow ceases or the pressurizing gas begins to exit from the filtrate outlet.

(v) The filter unit should be depressurized, the solid material removed and weighed and then or, in the case of final filtration prior to analysis, discarded. Do not allow the

* This procedure is intended to result in separation of the "free" liquid portion of the waste from any solid matter having a particle size greater than 0.45 micrometers. The sample will not filter, various other separation techniques can be used to aid in the filtration. As described above, pressure filtration is employed to speed up the filtration process. This does not alter the nature of the separation. If liquid does not separate during filtration, the waste can be centrifuged. If separation occurs during centrifugation the liquid portion (centrifugate) is filtered through the 0.45um filter prior to becoming mixed with the liquid portion of the waste obtained from the initial filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.

material retained on the filter pad to dry prior to weighing.

(vi) The liquid phase should be stored at 4°C for subsequent use in Step 8.

B. Structural Integrity Procedure

Equipment: A Structural Integrity Tester having a 3.18 cm (1.25 in.) diameter hammer weighing 0.33 kg (0.73 lbs.) and having a free fall of 15.24 cm (6 in.) shall be used. This device is available from Associated Design and Manufacturing Company, Alexandria, VA., 22314, as Part No. 125, or it may be fabricated to meet the specifications shown in Figure 1.

Procedure:

1. The sample holder should be filled with the material to be tested. If the sample of waste is a large monolithic block, a portion should be cut from the block having the dimensions of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder. For a fixated waste, samples may be cast in the form of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder for purposes of conducting this test. In such cases, the waste may be allowed to cure for 30 days prior to further testing.

2. The sample holder should be placed into the Structural Integrity Tester, then the hammer should be raised to its maximum height and dropped. This should be repeated fifteen times.

3. The material should be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.

Analytical Procedures for Analyzing Extract Contaminants

The test methods for analyzing the extract are as follows:

(1) For arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver: "Methods for Analysis of Water and Wastes," Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268 (EPA-600/4-79-020, March 1979).

(2) For Endrin; Lindane; Methoxychlor; Toxaphene; 2,4-D; 2,4,5-TP Silver: in "Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater," September 1978, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."

For all analyses, the method of standard addition shall be used for the quantification of species concentration.

This method is described in "Test Methods for the Evaluation of Solid Waste." (It is also described in "Methods for Analysis of Water and Wastes.")

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PROTOCOL FOR COLLECTION AND ANALYSIS OF SEDIMENTS IN PRICKETT'S POND

INTRODUCTION

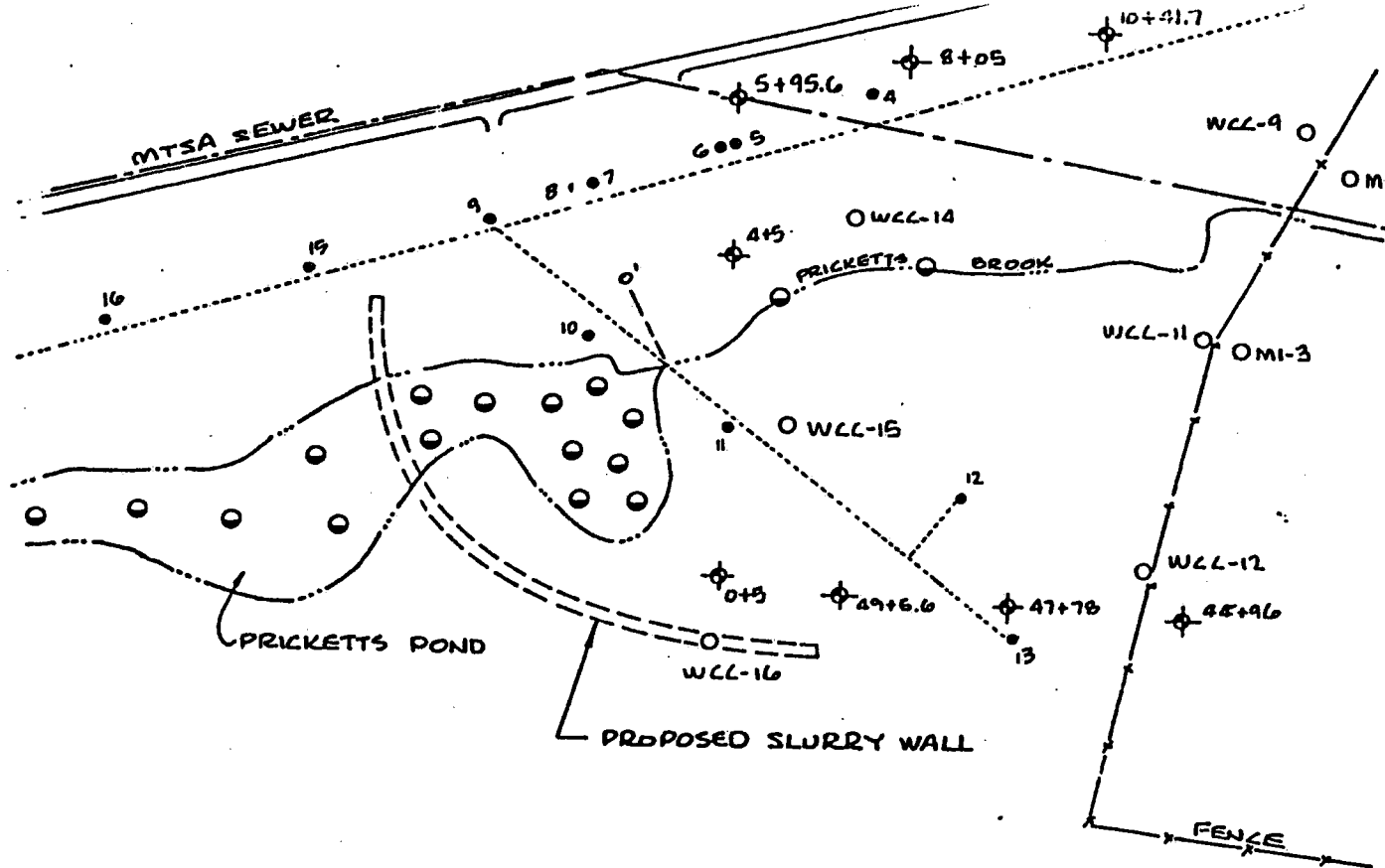
At the meeting on November 29, 1983, between NJDEP, Wehran Engineering, and Converse Consultants, a rationale for the sampling and analysis of the sediments in Prickett's Pond and Prickett's Brook was developed. It is predicated on the consensus that all remedial programs should be based on adequate data.

The proposed aquifer rehabilitation program includes a slurry wall which crosses Prickett's Pond at a point approximately one third along its downstream extent. It is proposed to sample and analyze the level of contamination in the sediments both upstream and downstream from this location. The investigation is intended to resolve whether or not any of these sediments must be dredged and disposed of off-site.

SAMPLING AND ANALYSIS

1. Proposed sampling locations are as indicated on the attached map. Included are 10 points upstream of the proposed slurry wall, 5 points downstream, and 2 in the Brook.
2. Samples shall be collected via the continuous core/split spoon method. .
(Samples of the Brook sediments may be collected by hand excavation.)

3. Cores shall be collected through the entire sediment and two feet into native material. Soil logs shall be recorded and reported.
4. Continuous sediment cores shall be subdivided into six-inch increments and each six-inch increment shall be split into two portions. The sediments shall be analyzed for metal content (cadmium, lead and zinc) by the EP Toxicity method following EPA procedures, except that the pH of the extracting solution shall be adjusted to match the field pH of the groundwater or of the surface water, whichever is lower, by adjusting with acetic acid. The second portion shall be analyzed for volatile organics by head space analysis following EPA methods. All samples shall be properly preserved and stored as specified by standard methods.
5. Two background sediment samples shall be collected from Prickett's Brook upstream of the CPS and Madison properties and analyzed in the same manner as the Prickett's Pond sediments.
6. Sediment samples shall be analyzed in alternate six-inch increments. For example, 0-6", 12-18", 24-30", 36-42", etc., for both metals and organics.
7. The results, as reported by the independent laboratory(s), shall be distributed among the parties involved for review and evaluation.



LEGEND

○ PROPOSED LOCATION

REVISED DEC 1983 - RELOCATED SEDIMENT SAMPLING
EXPLORATION PLAN

PROPOSED SEDIMENT SAMPLING PROGRAM
PRICKETTS POND
OLD BRIDGE, NEW JERSEY



Converse Consultants

Geotechnical Consultants



(4)

JOHN W. GASTON JR., P.E.
DIRECTOR

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

CN 029
TRENTON, NEW JERSEY 08625

DIRK C. HOFMAN, P.E.
DEPUTY DIRECTOR

Converse Consultants
91 Roseland Avenue
Post Office Box 91
Caldwell, New Jersey 07006

ATTENTION: Mr. Brian Ellwood

JAN 12 1984

Re: Sediment Sampling Protocol, CPS - Madison
Middlesex County

Dear Mr. Ellwood:

NJDEP has reviewed the proposed sediment sampling and analysis protocol for the Prickett's Pond and Brook sediments and concur with its contents.

Please inform me within two weeks of the dates that the sampling will take place so that NJDEP personnel can be on-site to observe said work. I can be contacted at (609) 292-0686.

Very truly yours,

Paul Harvey

Paul Harvey
Senior Environmental Specialist
Central Region
Enforcement Element

A43:G20

cc: Robert Mutch, Wehran Engineering
Director John Gaston, Jr.
George McCann
John Trela
Steve Gray, DAG

Converse Consultants, Inc.					TEST BORING LOG				BORING NO. B-1	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey									SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries									PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George									ELEVATION	
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE	F.J.			SHELBY	DATE START 03/08/84	
				DIA.	4"			3"	DATE FINISH 03/08/84	
				WT.	140#			140#	DRILLER R. Danielson	
				FALL	24"			24"±	CWDD REP. KJL	
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION				REMARKS	
					2.0' Water					
1		S-1			A. Black Organic Silt, very soft				pH=6.5, pond water Tube: 0-4.0' Rec.=24" Push	
					B. do					
2					C. Black Sand w/ layers Organic Silt					
					D. Black Peat & Organic Silt					
3										
4		S-2			A. Black Organic Silt				Tube: 4.0'-7.0' Rec.=36" Push & hammer	
					B. do					
5					C. do w/ Peat					
					D. Gray Sand, occasional gravel					
6					E. do					
					F. Tan Sand, medium fine					
7					5.5'					
					END OF BORING @ 7.0'					
8										
9										
10										
11										

On calibration,
pH meter measured
7.8 instead of 6.9.

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-2	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/08/84	
				DIA.			3"	DATE FINISH 03/08/84	
				WT.			140#	DRILLER R. Danielson	
				FALL			24"	CWOOD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					7.5' Water	
			P		A. Black Organic Silt & fine Sand 0.5	pH=5.8, pond water Tube: 0-3.5' Rec.=36"
1			P		B. Tan medium to fine Sand	
			P		C. do	
2		S-1	25		D. Yellow brown medium to fine Sand	
					E. do	
3			43		F. do	
4					END OF BORING @ 3.5'	
5						
6						
7						
8						
9						
10						
11						

On calibration,
pH meter measured
7.8 instead of 6.9.

Converse Consultants, Inc.					TEST BORING LOG					BORING NO. B-3	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey										SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries										PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George										ELEVATION	
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE				SHELBY	DATE START 03/12/84		
				DIA.				3"	DATE FINISH 03/12/84		
				WT.				140#	DRILLER R. Danielson		
				FALL				24"	CWDD REP. KJL		
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION					REMARKS	
					8.0' Water						
					0.25'						
1		S-1	P		A. Black gray Silty Sand-3'±					Tube: 0-4.0' Rec.=44"	
					B. Gray Sand, medium fine, uniformly graded						
					C. do						
2			16		D. do						
					E. do						
			30		F. do						
3					G. do						
			25		H. do						
4					END OF BORING @ 4.0'						
5											
6											
7											
8											
9											
10											
11											

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-4	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SMT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE					
				DIA.				SHELBY	
				WT.				3"	
				FALL				140#	
								24"	
								CWDD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					3.5' Water	
			P			
1						
			P			
2						
		S-1	11		A. Black Organic SILT & Fibers, Weeds-6"±	Tube: 0-3.0'
3					B. Gray Sand, piece Coarse Gravel	Rec.=NR, moved 2'±
					C. do	Tube: 0-5.0'
4					D. Tan Sand, medium to fine	Rec.=42"
			21		E. do	
5					F. do	
			22		G. w/occasional black organic matter and clay laminations	
6						
7						
8						
9						
10						
11						
					END OF BORING @ 5.0'	

Converse Consultants, Inc.

TEST BORING LOG

BORING NO. B-5

PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey

SHT. NO. 1 OF 1

CLIENT Madison/CPS Industries

PROJ. NO. 81-07188-06

BORING CONTRACTOR Warren George

ELEVATION

GROUND WATER

DATE	TIME	DEPTH	CASING	TYPE	CAS.	SAMP.	CORE	TUBE	DATUM
				DIA.				SHELBY	DATE START 03/12/84
				WT.				3"	DATE FINISH 03/12/84
				FALL				140#	DRILLER R. Danielson
								24"	CWDD REP. KJL

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION 4.0' Water	REMARKS
			P		A. Black Organic SILT & SAND-4"±	0.3±
1					B. Gray brown Sand, occasional pieces fine Gravel	
			6		C. do	
2		S-1			D. do	
			17		E. do	
3					F. Tan Sand, occasional clay laminations	
			20		G. do	
4					H. do	
					END OF BORING @ 4.0'	
5						
6						
7						
8						
9						
10						
11						

pH=6.16, pond water
Tube: 0-4.0'
Rec.=47"On calibration,
pH meter measured
7.8 instead of 6.9.

Converse Consultants, Inc.

TEST BORING LOG

BORING NO. B-6

PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey

SHT. NO. 1 OF 1

CLIENT Madison/CPS Industries

PROJ. NO. 81-07188-06

BORING CONTRACTOR Warren George

ELEVATION

GROUND WATER

DATUM

DATE	TIME	DEPTH	CASING	TYPE	CAS.	SAMP.	CORE	TUBE	
				DIA.				SHELBY	DATE START 03/12/84
				WT.				3"	DATE FINISH 03/12/84
				FALL				140#	DRILLER R. Danielson
								30"	CWDD REP. KJL

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					7.0' Water	
			P/6"		A. Black Organic Silt, less than 3" 0.25±	
1			4		B. Gray brown Sand	
					C. do	
2		S-1	12		D. 2" thick layer Black Organic Silt, with orange brown stained sand	pH=5.69, pond water Tube: 0-4.0' Rec.=33" pp.=1.25TSF, D.
3			24		E. Gray Sand, medium to fine	
4			10/6"		F. do	
					END OF BORING @ 4.0'	On calibration, pH meter measured 7.8 instead of 6.9.
5						
6						
7						
8						
9						
10						
11						

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-7	
PROJECT Prickett's Pond Sampling. Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/15/84	
				DIA.			3"	DATE FINISH 03/15/84	
				WT.			140#	DRILLER R. Danielson	
				FALL			24"±	CWOOD REP. KJL	
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION				REMARKS
					2.0' Water				
			P		A., B., Brown Organic SILT & Sand-6"±				
					C. Brown Sandy Gravel-3"±				0.5
1									
			P		D. Gray brown Sand w/occasional orange brown sand layer				
					E. do				
2					F. do w/infrequent laminations, 1/2" thick, of Silty Clay				
		S-1	P		G. do				
					H. do				
			22						
4									
			24						
5					END OF BORING @ 5.0'				
6									
7									
8									
9									
10									
11									

pH=6.78, pond water
Tube: 0-5.0'
Rec.=42"

On calibration,
pH meter measured
8.0 instead of 6.9.

Converse Consultants, Inc.					TEST BORING LOG					BORING NO. B-8	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey										SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries										PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George										ELEVATION	
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE				SHELBY	DATE START 03/15/84		
				DIA.				3"	DATE FINISH 03/15/84		
				WT.				140#	DRILLER R. Danielson		
				FALL				24"	CWDD REP. KJL		

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					3.0' Water	
			P/6"		A. Black Organic SILT-3"	0.25 pH=8.0 frozen 0.5 Tube: 0-5.0' Rec.=48"
1			3/6"		B. Brown Orange Sandy Gravel-3"	
			1		C. Tan Sand	
2		S-1	4		D. do	
3			18		E. Gray Sand w occasional laminations SILTY CLAY	
4			30		F. do	
					G. do	
5					H. do	
					END OF BORING @ 5.0'	
6						
7						
8						
9						
10						
11						

Converse Consultants, Inc.				TEST BORING LOG					BORING NO. B-9	
PROJECT Prickett's Pond Sampling. Old Bridge, New Jersey									SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries									PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George									ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/14/84		
				DIA.			3"	DATE FINISH 03/14/84		
				WT.			140#	DRILLER R. Danielson		
				FALL			24"	CWDD REP. KJL		
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION			REMARKS		
					5.0' Water					
			P		A. Black Organic SILT-6" thick 0.5			pH=6.88, pond water Tube: 0-5.0' Rec.=39"		
1		S-1	8		B. Brown Gravelly Sand					
2			7		C. Brown/Orange Sand					
3			5		D. Brown Gray Sand, occasional laminations (1/2"th.) Silty Clay, some orange staining					
4			6		E. do					
5					F. do					
6					G. do					
7					END OF BORING @ 5.0'					
8										
9										
10										
11										
								On calibration, pH meter measured 7.7 instead of 6.9.		

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-10	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE					
				DIA.			SHELBY	DATE START 03/14/84	
				WT.			3"	DATE FINISH 03/14/84	
				FALL			140#	DRILLER R. Danielson	
							24"	CWDD REP. KJL	
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION			REMARKS	
					2.0' Water				
1			P		A. Black Organic SILT-6"			pH=6.55 pond water Tube: 0-5.0' Rec.=48"	
					B. Brown Sandy Gravel-9"±				
2			4						
		S-1	4		C. Gray Sand, occasional ½" thick laminations Silty Clay (orange brown staining on both sides of clay layer)			On calibration, pH meter measured 7.7 instead of 6.9.	
3			13		D. do				
					E. do				
4					F. do				
			19		G. do				
5					H. do				
					END OF BORING @ 5.0'				
6									
7									
8									
9									
10									
11									

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-11	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE	F.I.		SHELBY	DATE START 03/14/84	
				DIA.	4"		3"	DATE FINISH 03/14/84	
				WT.	140#		140#	DRILLER R. Danielson	
				FALL	24"		24"	CWOD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					1.2' Water	
			P		A. Black Organic SILT & SAND	pH=6.61 Tube: 0-5.0' Rec.=42"
1	P					
			P		B. Gray Sand with Organic SILT	
2	P	S-1			C. do	2.0±'
			6		D. Brown Sand, coarse to medium, with fine Gravel	
3	13				E. do	
			12		F. do and gravel (3" layer)	
4	14				G. Gray Sand, medium to fine	
			7			
5	20				A. Gray Sand, medium to fine w/occasional laminations w/Black Organic Silt	Tube: 5.0'-8.0' Rec.=24"
		S-2	P		B. do	
6			14		C. do with occasional laminations ½"-1½" thick	
7			16		D. do	Note: 2D-Gray Silty Clay
8						
					END OF BORING @ 8.0'	
9						On calibration, pH meter measured 7.6 instead of 6.9.
10						
11						

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-12	
PROJECT Prickerr's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER								DATUM	
DATE	TIME	DEPTH	CASING	TYPE	CAS.	SAMP.	CORE	TUBE	
				DIA.				SHELBY	DATE START 03/14/84
				WT.				3"	DATE FINISH 03/14/84
				FALL				140#	DRILLER R. Danielson
								24"	CWDD REP. KJL

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					2.0' Water	
			P		A. Black Organic SILT, WEEDS 6"	Tube: 0-5.0' Rec.=45" pH=7.6 pond water
1						
			P		B. Brown Gravelly Sand	
2		S-1				
			6		C. Gray Sand, Medium fine	
3					D. do	
			7		E. do with occasional laminations 1/4"-1/2" thick of Silty Clay	
4					F. do	On calibration, pH meter measured 7.7 instead of 6.9.
			18		G. do	
5					H. do	
					END OF BORING @ 5.0'	
6						
7						
8						
9						
10						
11						

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-13	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/14/84	
				DIA.			3"	DATE FINISH 03/14/84	
				WT.			140#	DRILLER R. Danielson	
				FALL			24"	CWDD REP. KJL	
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION			REMARKS	
1		S-1	P		A. Black Organic SILT, FIBERS-8"±			pH=7.2, pond water	
				B. Brown Sandy Gravel			Tube: 0-5		
			P/6"				Rec.=51"		
2			9		D. Orange brown Sand with occasional laminations of Silty Clay			Sample D-Silty Clay	
3			8		E. do				
					F. do				
4			18		G. Gray Sand, medium fine				
5			18/6"		H. do				
6									
7									
8									
9									
10									
11									

END OF BORING @ 5.0'

Cleaned tube with methanol & water.

On calibration, pH meter measured 7.7 instead of 6.9.

Converse Consultants, Inc.					TEST BORING LOG					BORING NO. B-14	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey										SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries										PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George										ELEVATION	
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE	F.J.			SHELBY	DATE START 03/15/84		
				DIA.	4"			3"	DATE FINISH 03/15/84		
				WT.	140#			140#	DRILLER R. Danielson		
				FALL	24"			24"	CWDD REP. KJL		

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS	
					1.0' Water		
1	P	S-1	P		A. Black Organic SILT, weeds-9" [±]	pH=7.9, pond water Tube: 0-5.0' Rec.=48"	
					B. do		0.8 [±]
			P				
2	P				C. Brown Gravelly Sand-3" [±]		
					D. Gray Sand		
			3		E. do		
3	P			6	F. Gray Sand occasional clay laminations, pocket brown sand		
					G. do		
					H. do		
					I. do		
4	24		12	A. Gray Sand occasional laminations of Silty Clay 1/4" thick, brown sand staining top & bottom	Tube: 5.0'-9.0' Rec.=27"		
				B. do			
				C. do			
				D. do			
5	50		14	E. do			
				F. do			
6			26				
7		S-2					
8				22			
9				28			
10							
11							

END OF BORING @ 9.0'

On calibration,
pH meter measured
7.8 instead of 6.9.

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-15	
PROJECT Prickett's Pond Sampling. Old Bridge, New Jersey								SHT. NO. 1 OF	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE	F.J.		SHELBY	DATE START 03/15/84	
				DIA.	4"		3"	DATE FINISH 03/15/84	
				WT.	140#		140#	DRILLER R. Danielson	
				FALL	24"		24"	CWDD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					1.5' Water	
1		S-1	P		A. Black Organic SILT-9"±	pH=7.3, pond water Tube: 0-5.0' Rec.=30"
					B. do w/Brown Gravelly Sand	
			P		C. Brown Gravelly Sand	
2			P/6"		D. Brown Sand	
			4		E. do	
			9			
			9 7/6"			
5						
6						
7						
					CONTINUED - SEE LOG B-15A	Probably lost 3.0'-5.0', therefore moved 2' west and started sampling @ 3.0'.
8						
9						
10						
11						
						On calibration, pH meter measured 7.9 instead of 6.9

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-15A	
PROJECT Prickett's Pond Sampline, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Warren George								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE	F.J.		SHELBY	DATE START 03/15/84	
				DIA.	4"		3"	DATE FINISH 03/15/84	
				WT.	140#		140#	DRILLER R. Danielson	
				FALL	24"		24"	CWDD REP. KJL	


DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
					1.5' Water	
1						
2						
3						
			10		A. Gray brown Sand	
4						
			17		B. do w/ occasional laminations 1/4" Silty Clay	
5		S-2				
			20		C. do	
6					D. do	
			25		E. do	
7						
					END OF BORING @ 7.0'	
8						
9						
10						
11						

Moved 2' West-set casing & washed.
Tube: 3.0'-7.0'
Rec.=30"

Converse Consultants, Inc.				TEST BORING LOG				BORING NO B-16	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Converse Consultants, Incorporated								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/16/84	
		1.0	None	DIA.			3"	DATE FINISH 03/16/84	
				WT.			40#	DRILLER WTM	
				FALL			18"±	CWDD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
1		S-1			A. Brown Sandy Gravel	Tube: 0-3.0' Rec.=30"
					B. do	
					C. Gray Sand mixed with Organic SILT & FIBERS	
2					D. Black Organic SILT @ 24" down (3'± thk.)	
					E. Brown Gray Gravelly Sand	
3		S-2			A. Black gray Gravelly Sand (Trace Organic SILT)	Tube: 0-5' Rec.=48'± (24"-from above)
					B. do	
					C. Brown Sand, trace Black Organic SILT	
4					D. do (w/o Organic SILT)	
					4.5'±	
5					END OF BORING @ 5.0'	
6						
7						
8						
9						
10						
11						

Converse Consultants, Inc.					TEST BORING LOG				BORING NO. B-17		
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey									SHT. NO. 1 OF 1		
CLIENT Madison/CPS Industries									PROJ. NO. 81-07188-06		
BORING CONTRACTOR Converse Consultants, Incorporated									ELEVATION		
GROUND WATER					CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE				SHELBY	DATE START 03/16/84		
				DIA.				3"	DATE FINISH 03/16/84		
				WT.				40#	DRILLER WTM		
				FALL				18"±	CWDD REP. KJL		
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION					REMARKS	
1		S-1			A. Black Organic SILT & SAND 0.5±					Tube: 0-3.5' Rec.=42"± (densified to 30"±) Boring located near middle of stream bed.	
2					B. Brown Sandy Gravel, with occasional Black Organic SILT						
					C. do						
3					D. do						
					E. do						
4					END OF BORING @ 3.5'						
5											
6											
7											
8											
9											
10											
11											

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-17A	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Converse Consultants								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/16/84	
				DIA.			3"	DATE FINISH 03/16/84	
				WT.			40#	DRILLER WTM	
				FALL			18"±	CWOD REP. KJL	
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION				REMARKS
1		S-1			A. Brown Sandy Gravel, w/ little Organic SILT				Tube: 0-3.0' Rec.=33" Boring located near edge of stream bed.
			B. Black gray Sand						
			1.5'±						
2			C. Brown Sand						
			D. do						
			E. Tan Gravelly Sand						
				F. Tan Sand					
3					END OF BORING @ 3.0'				
4									
5									
6									
7									
8									
9									
10									
11									

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-18		
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1		
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06		
BORING CONTRACTOR Warren George								ELEVATION		
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM		
DATE	TIME	DEPTH	CASING	TYPE	F.J.		SHELBY	DATE START 03/16/84		
-		1.0	None	DIA.	4"		3"	DATE FINISH 03/16/84		
				WT.	140#		140#	DRILLER R. Danielson		
				FALL	24"		24"	CWDD REP. KJL		
DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION				REMARKS	
1	P	S-1	P	P	A. Brown Gray SILTY Sand				Boring located on delta, done with tripod rig on land. Tube: 0-5.0' Rec.=48"	
					B. do					
			6		C. Brown Black Sand					
					D. do					
2	4		9		E. Brown Sand, Gravel					
					F. do					
			20		G. do					
					H. do					
3	19									
4	35	25								
5	64									
		20	A. Gray Sand							
			B. do							
		20	C. do w/clay laminations 1/4" thick.k							
6										
7		22								
			D. do of Silty Clay, brown staining							
8		34								
			E. do							
9										
10										
11										

END OF BORING @ 9.0'

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-19	
PROJECT Prickett's Pond Sampling. Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Converse Consultants, Incorporated								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/16/84	
				DIA.			3"	DATE FINISH 03/16/84	
				WT.			40#	DRILLER WTM	
				FALL			18"±	CWDD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
1		S-1			A. Brown Gravelly Sand	Tube: 0-5.0' Rec.=46"±(densified to 36" prior to pulling tube)
				B. do		
2				C. Gray orange brown Sand w/ laminations Black Gray Silty Clay		
				D. do		
3				E. do		
				F. do		
4						
5						
6						
7						
8						
9						
10						

END OF BORING @ 5.0'

Converse Consultants, Inc.				TEST BORING LOG				BORING NO. B-20	
PROJECT Prickett's Pond Sampling, Old Bridge, New Jersey								SHT. NO. 1 OF 1	
CLIENT Madison/CPS Industries								PROJ. NO. 81-07188-06	
BORING CONTRACTOR Converse Consultants, Incorporated								ELEVATION	
GROUND WATER				CAS.	SAMP.	CORE	TUBE	DATUM	
DATE	TIME	DEPTH	CASING	TYPE			SHELBY	DATE START 03/16/84	
				DIA.			3"	DATE FINISH 03/16/84	
				WT.			40#	DRILLER WTM	
				FALL			18"	CWDD REP. KJL	

DEPTH FT.	CASING BLOWS	SAMPLE NO.	BLOWS ON TUBE PER 12"	SYMBOL	IDENTIFICATION	REMARKS
1		S-1			A. Brown Sand, w/ leaves	Tube: 0-4.0' Rec.=38"
					B. do	
2					C. Black PEAT	
					D. do	
					E. do	
3					F. Brown Black Silty Sand, (silt probably organic)	
4						
					END OF BORING @ 4.0'	
5						
6						
7						
8						
9						
10						
11						

DRAWING IS PART OF CONVERSE CONSULTANTS, INC.
 REPORT No. 81-97188, AND SHOULD BE READ TOGETHER
 WITH THE REPORT FOR COMPLETE EVALUATION.

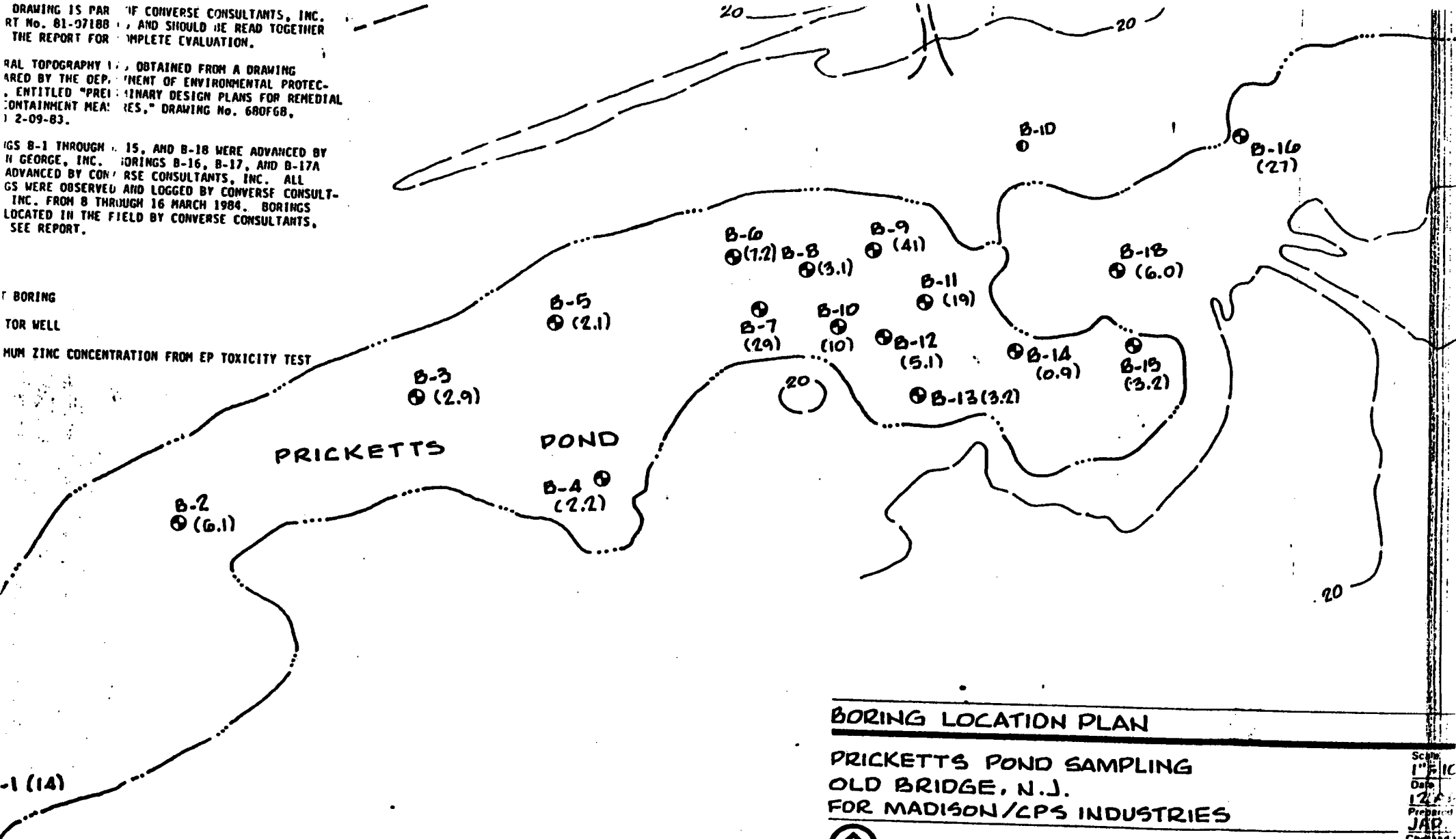
TOPOGRAPHY WAS OBTAINED FROM A DRAWING
 PREPARED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION,
 ENTITLED "PRELIMINARY DESIGN PLANS FOR REMEDIAL
 CONTAINMENT MEASURES," DRAWING No. 680FG8,
 DATE 12-09-83.

BORINGS B-1 THROUGH B-15, AND B-18 WERE ADVANCED BY
 H. GEORGE, INC. BORINGS B-16, B-17, AND B-17A
 WERE ADVANCED BY CONVERSE CONSULTANTS, INC. ALL
 BORINGS WERE OBSERVED AND LOGGED BY CONVERSE CONSULT-
 ANTS, INC. FROM 8 THROUGH 16 MARCH 1984. BORINGS
 LOCATED IN THE FIELD BY CONVERSE CONSULTANTS,
 SEE REPORT.

FOR BORING

FOR WELL

MUM ZINC CONCENTRATION FROM EP TOXICITY TEST



BORING LOCATION PLAN

PRICKETTS POND SAMPLING
 OLD BRIDGE, N.J.
 FOR MADISON/LPS INDUSTRIES



Converse Consultants

Geotechnical Engineering
 and Applied Sciences

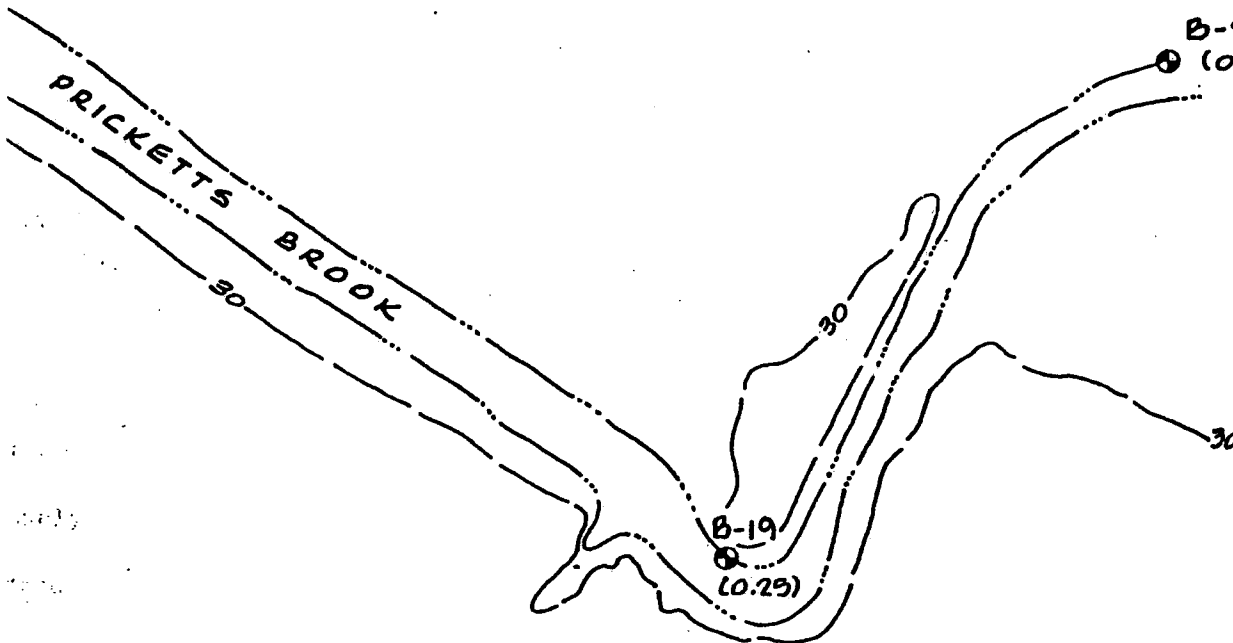
Scale
 1" = 10'
 Date
 12/2/83
 Prepared
 JAD
 Checked
 RBE
 Approved
 RBE

2. GENERAL TOPOGRAPHY WAS OBTAINED FROM A DRAWING PREPARED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, ENTITLED "PRELIMINARY DESIGN PLAN," DRAWING No. NOT SHOWN, RECEIVED BY CONVERSE CONSULTANTS, INC. 2/03/83.
3. BORINGS B-19 AND B-20 WERE ADVANCED AND LOGGED BY CONVERSE CONSULTANTS, INC. ON 16 MARCH; SEE REPORT.

LEGEND

⊕ TEST BORING

(0.18) MAXIMUM ZINC CONCENTRATION
FROM EP TOXICITY TEST



BORING LOCATION PLAN

PRICKETTS POND SAMPLING
OLD BRIDGE, N.J.
FOR MADISON/LPS INDUSTRIES



Converse Consultants

Geotechnical Engineering
and Applied Sciences

Scale
1" = 10'
0 10 20 30
Feet

general testing corporation



water and wastewater testing specialists

710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

LABORATORY CHRONICLE

Laboratory #J-2869

Date/Comment

Order Placed

Client

Samples Collected by GTC

-

Samples Shipped by Client

3/9/84

Samples Received by GTC

3/9/84

Chain of Custody Included

Yes

Analytical Request Form Submitted

Condition of Sample

16 samples received -

Require EP Tox (metals) on only 8 samples.
Hold others.

Organics

Extracted

Analyzed

1. Volatiles
2. Base/Neutrals
3. Acid Extractables
4. Pesticides/PCB's
5. Herbicides/Pesticides

Inorganics (parameters with short holding times)

1. Distillations (Phenols, Cyanides, etc.)
2. Nutrients (Nitrogens & Phosphates)
3. BOD's
- 4.

Other Analysis Initiated

EP Tox Extractions Initiated

3/19/84

All Analysis Completed

Extraction analysis (metals) completed by

3/26/84

Reported

3/30/84

710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. J 2869 Date 3/30/84

Sample(s) Reference

Soil Samples

Old Bridge/Madison

ANALYTICAL RESULTS

(mg/l unless stated otherwise)

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) Indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

Richard White / 1991

Laboratory Director

710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. J 2869 Date 3/30/84

Sample(s) Reference

Soil Samples

Old Bridge/Madison

Date Samples (☒) received (☐) collected by General Testing 3/9/84

P.O. # _____

(mg/l unless stated otherwise)

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

André Malraux

Laboratory Director

general testing corporation



water and wastewater testing specialists

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(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

LABORATORY CHRONICLE

	<u>Date/Comment</u>
Order Placed	
Samples Collected by GTC	Client
Samples Shipped by Client	3/19/84
Samples Received by GTC	3/19/84
Chain of Custody Included	Yes
Analytical Request Form Submitted	No
Condition of Sample	Ok as received

Organics

Extracted

Analyzed

1. Volatiles
2. Base/Neutrals
3. Acid Extractables
4. Pesticides/PCB's
5. Herbicides/Pesticides

Inorganics (parameters with short holding times)

1. Ammoniations (Phenols, Cyanides, etc.)
2. Nutrients (Nitrogens & Phosphates)
3. BOD's
- 4.

Other Analysis Initiated	EP Toxicity Extraction	3/21/84
All Analysis Completed		4/5/84
Reported		4/10/84

Analyses per EP Toxicity Procedure, Federal Register
Volume 45, No. 98, May 19, 1980. Pages 33121-33133.

general testing corporation

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710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
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(201) 488-5242

LABORATORY REPORT

Job No. 2885 Date April 9, 1984

Client
Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference
Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (x) received () collected by General Testing 3/19/84

P.O. # _____

ANALYTICAL RESULTS

(mg/l unless stated otherwise)

Sample Description	Cadmium	Copper	Lead	Zinc
Date(s)				
Time(s)				
Sample:				
B3 S-1A Collected 3/12/84	<0.01	<0.05	<0.05	2.9
B3 S-1C	<0.01	<0.05	<0.05	0.12
B3 S-1E	<0.01	1.1	<0.05	0.69
B3 S-1G	<0.01	0.11	<0.05	0.16
B4 S-1A	<0.01	<0.05	<0.05	2.2
B4 S-1C	<0.01	0.14	<0.05	0.14
B4 S-1E	<0.01	0.09	<0.05	0.21
B4 S-1G	<0.01	<0.05	<0.05	0.36
B5 S-1A	<0.01	<0.05	<0.05	2.1
B5 S-1C	<0.01	0.14	<0.05	0.25
B5 S-1E	<0.01	1.4	<0.05	0.83
B5 S-1G	<0.01	0.40	<0.05	0.32
B6 S-1A	<0.01	0.15	0.05	7.2
B6 S-1B	<0.01	0.06	<0.05	0.17
B6 S-1D	<0.01	<0.05	<0.05	0.62

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

David H. Berner

Laboratory Director

general testing corporation

water and wastewater testing specialists

710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

LABORATORY REPORT

Job No. 2885 Date April 9, 1984

Client

Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference

Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (X) received () collected by General Testing 3/19/84

P.O. # _____

ANALYTICAL RESULTS

(mg/l unless stated otherwise)

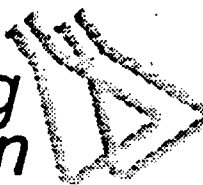
Sample Description	Cadmium	Copper	Lead	Zinc
Date(s)				
Time(s)				
Sample:				
B6 S-1F Collected 3/12/84	<0.01	1.6	<0.05	1.4
B7 S-1A Collected 3/15/84	<0.01	<0.05	<0.05	29
B7 S-1C	<0.01	0.05	<0.05	0.21
B7 S-1E	<0.01	0.73	<0.05	0.59
B7 S-1G	<0.01	0.19	<0.05	0.41
B8 S-1A	<0.01	0.42	0.06	3.1
B8 S-1C	<0.01	0.12	<0.05	0.42
B8 S-1E	0.25	0.60	<0.05	0.94
B8 S-1G	0.01	0.41	<0.05	0.80
B9 S-1A Collected 3/14/84	0.02	<0.05	<0.05	41
B9 S-1C	<0.05	<0.05	<0.01	0.12
B9 S-1E	<0.01	<0.05	<0.05	1.1
B9 S-1G	<0.01	0.09	<0.05	0.28
B10 S-1A	0.04	0.09	<0.05	10
B10 S-1C	<0.01	<0.05	<0.05	0.12

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.



Laboratory Director

general testing corporation



water and wastewater testing specialists

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LABORATORY REPORT

Job No. 2885 Date April 9, 1984

Client

Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference

Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (x) received () collected by General Testing 3/19/84

ANALYTICAL RESULTS

(mg/l unless stated otherwise)

P.O. #	Sample Description	Cadmium	Copper	Lead	Zinc
	Time(s)				
	Sample(s)				
	B10 S-1E Collected 3/14/84	<0.01	<0.05	<0.05	0.01
	B10 S-1G	<0.01	<0.05	<0.05	0.04
	B11 S-1A	<0.01	0.06	<0.05	3.2
	B11 S-1C	<0.01	<0.05	<0.05	19
	B11 S-1E	<0.01	<0.05	<0.05	1.3
	B11 S-1G	<0.01	0.05	<0.05	0.66
	B11 S-2A	<0.01	<0.05	<0.05	0.49
	B11 S-2C	<0.01	<0.05	<0.05	0.29
	B12 S-1A	<0.01	0.09	<0.05	5.1
	B12 S-1C	<0.01	<0.05	<0.05	0.08
	B12 S-1E	0.42	0.50	<0.05	0.57
	B12 S-1G	<0.01	<0.05	<0.05	0.11
	B13 S-1A	<0.01	<0.05	<0.05	3.2
	B13 S-1C	<0.01	<0.05	<0.05	0.02
	B13 S-1G	<0.01	<0.05	<0.05	1.6

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

Laboratory Director

general testing corporation

water and wastewater testing specialists

710 Exchange Street
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Hackensack, NJ 07601
(201) 488-5242

LABORATORY REPORT

Job No. 2885 Date April 9, 1984

Client -

Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference

Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (x) received () collected by General Testing 3/19/84

P.O. # _____

ANALYTICAL RESULTS

(mg/l unless stated otherwise)

Sample Description	Cadmium	Copper	Lead	Zinc
Date(s)				
Time(s)				
Samples:				
B13 S-1E Collected 3/14/84	<0.01	<0.05	<0.05	0.17
B14 S-1A Collected 3/15/84	<0.01	<0.05	<0.05	7.6
B14 S-1C	<0.01	<0.05	<0.05	1.4
B14 S-1E	<0.01	<0.05	<0.05	0.90
B14 S-1I	<0.01	<0.05	<0.05	0.91
B14 S-2A	<0.01	<0.05	<0.05	0.46
B14 S-2C	<0.01	<0.05	<0.05	0.46
B14 S-2E	<0.01	<0.05	<0.05	0.17
B14 S-1G	<0.01	0.07	<0.05	0.52
B15 S-1A	0.04	<0.05	<0.05	0.17
B15 S-1C	<0.01	<0.05	<0.05	3.2
B15 S-1E	<0.01	<0.05	<0.05	0.07
B15 S-2A	<0.01	<0.05	<0.05	0.21
B15 S-2C	<0.01	<0.05	<0.05	2.0
B16 S-1A Collected 3/16/84	<0.01	0.30	<0.05	0.71

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

David H. [Signature]

Laboratory Director

general testing corporation

water and wastewater testing specialists

710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

LABORATORY REPORT

Job No. 2885 Date April 9, 1984

Client
Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference
Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (x) received () collected by General Testing 3/19/84

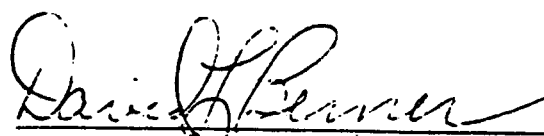
ANALYTICAL RESULTS

P.O. # _____

(mg/l unless stated otherwise)

Sample Description	Cadmium	Copper	Lead	Zinc
Date(s)				
Time(s)				
Samples:				
B16 S-1C Collected 3/16/84	<0.01	<0.05	<0.05	4.5
B16 S-1D	<0.01	<0.05	<0.05	21
B16 S-2A	0.03	<0.05	<0.05	27
B16 S-2C	<0.01	<0.05	<0.05	9.1
B17 S-1A	<0.01	0.08	<0.05	4.9
B17 S-1C	<0.01	<0.05	<0.05	2.8
B17 S-1E	<0.01	<0.05	<0.05	4.5
B17A S-1A	<0.01	<0.05	<0.05	4.5
B17A S-1C	<0.01	<0.05	<0.05	2.1
B17A S-1E	<0.01	<0.05	<0.05	1.1
B18 S-1A	<0.01	<0.05	<0.05	0.68
B18 S-1C	<0.01	<0.05	<0.05	4.9
B18 S-1E	<0.01	0.06	<0.05	3.1
B18 S-1G	<0.01	<0.05	<0.05	6.0
B18 S-2A	<0.01	<0.05	<0.05	2.3

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.



Laboratory Director



710 Exchange Street
Rochester, NY 14608
(716) 454-3760

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. 2885 Date April 9, 1984

Mr. Brian Ellwood
Converse Consultants
91 Roseland Avenue, P.O. Box 91
Caldwell, NJ 07006

Sample(s) Reference
Soil Samples
Pricketts Pond - Madison
Old Bridge, NJ

Date Samples (x) received () collected by General Testing 3/19/84

P.O. # _____

(mg/l unless stated otherwise)

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

David H. Leiser

Laboratory Director

710 Exchange Street
Rochester, NY 14608

85 Trinity Place
Hackensack, NJ 07601

GENERAL TESTING CORP.

CHAIN OF CUSTODY RECORD

Sampling Place: Perkins Road

Old Bridge NJ
Street City State

Sample Source: _____ Producer _____ Hauler _____ Disposal Site _____
Other _____

Shipper Name: Quinn's Consultants

Shipper Address: 2000 Monmouth Ave 07006
Street City State Zip

Shippers Telephone # (703) 220-4171

Collector's Name: K. J. Lissow ; K. J. Lissow
Print Signature

Field Information: For EPTA

Relinquished by: _____ Received by: _____ Date/Time _____

1. sign. K. J. Lissow 1. sign. A. Patac 3/19/84 1:30
for Quinn's Consultants for GT
2. sign. A. Patac sign. Brian Stelmach 3/21/84
for GT for GT-C-Rochester
3. sign. _____ sign. _____
for _____ for _____

Received for Laboratory by: _____

Method of Shipment: _____

Sample	Sample Location	Date	Time	Sample Type	Number of Containers
P-3 -1 A,B,C,D,E,F,G,H		3/12/84		Soil	8
P-4 -1 A,B,C,D,E,F,G		3/12/84		Soil	7
P-5 -1 A,B,C,D,E,F,G,H		3/12/84		Soil	8
P-6 -1 A,B,C,D,E,F		3/12/84		Soil	6
P-7 -1 A,B,C,D,E,F,G,H		3/15/84		Soil	8
P-8 -1 A,B,C,D,E,F,G,H		3/15/84		Soil	8
P-9 -1 A,B,C,D,E,F,G		3/14/84		Soil	7
P-10 -1 A,B,C,D,E,F,G		3/14/84		Soil	8

710 Exchange Street
Rochester, NY 14608

85 Trinity Place
Hackensack, NJ 07601

GENERAL TESTING CORP.

2 of 3

CHAIN OF CUSTODY RECORD

Sampling Place: Truckee Pond
Old Bridge NJ
Street City State

Sample Source: _____ Producer _____ Hauler _____ Disposal Site _____
Other _____

Shipper Name: General Consultants

Shipper Address: 91 Boulevard Edison NJ 07036
Street City State Zip

Shippers Telephone # (703) 226-1191

Collector's Name: G. Lavigne ; [Signature]
Print Signature

Field Information: For E.P. Tox

Relinquished by:	Received by:	Date/Time
1. sign. <u>[Signature]</u> for <u>General Consultants</u>	1. sign. <u>[Signature]</u> for <u>GTC</u>	<u>3/14/84</u> <u>4:30</u>
2. sign. _____ for _____	sign. <u>Brian Stirling</u> for <u>GTC Rochester</u>	<u>3/21/84</u>
3. sign. _____ for _____	sign. _____ for _____	<u>/</u>

Received for Laboratory by: _____

Method of Shipment: _____

Sample	Sample Location	Date	Time	Sample Type	Number of Containers
B-11 A, B, C, D, E, F, G		3/14/84		Soil	7
B-11 A, B, C, D, E, F, G, H		3/14/84		Soil	4
B-12 A, B, C, D, E, F, G, H		3/14/84		Soil	8
B-13 A, B, C, D, E, F, G, H		3/14/84		Soil	8
B-14 A, B, C, D, E, F, G, H, I		3/15/84		Soil	9
B-14 A, B, C, D, E, F		3/15/84		Soil	6
B-15 A, B, C, D, E		3/15/84		Soil	5
B-15 A, B, C, D, E		3/15/84		Soil	5

710 Exchange Street
Rochester, NY 14608

85 Trinity Place
Hackensack, NJ 07601

GENERAL TESTING CORP.

CHAIN OF CUSTODY RECORD

Sampling Place: Prickles Pond
Old Bridge NJ
Street City State

Sample Source: _____ Producer _____ Hauler _____ Disposal Site _____
Other _____

Shipper Name: Consensus Consultants

Shipper Address: 91 Highland Ave, Caldwell NJ 07006
Street City State Zip

Shippers Telephone # (201) 726 9191

Collector's Name: C. J. Lawrence K. I. (Name)
Print Signature

Field Information: For EPT

Relinquished by:	Received by:	Date/Time
1. sign. <u>[Signature]</u> for <u>Consensus Consultants</u>	1. sign. <u>[Signature]</u> for <u>GTC</u>	<u>3/14/84 4:30</u>
2. sign. _____ for _____	sign. <u>Brian Stelling</u> for <u>GTC Rochester</u>	<u>3/21/84</u>
3. sign. _____ for _____	sign. _____ for _____	<u>1</u>

Received for Laboratory by: _____

Method of Shipment: _____

Sample	Sample Location	Date	Time	Sample Type	Number of Containers
B-16 B, C, D, E		3/14/84		Soil	5
B-17 A, E, C, D		3/16/84		Soil	4
B-17 A, E, C, D, E		3/16/84		Soil	5
B-17A A, B, C, D, E, F		3/16/84		Soil	6
B-19 A, B, C, D, E, F, G, H		3/16/84		Soil	8
B-18 A, B, C, D, E		3/16/84		Soil	5
B-19 A, B, C, D, E, F		3/16/84		Soil	6
B-20 A, B, C, D, E, F		3/16/84		Soil	6

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. 2869 & 2885 Date April 11, 1984

Sample(s) Reference

Mr. Brian Elwood
Converse Consultants
91 Roseland Avenue, Box 91
Caldwell, NJ 07006

Soils - Madison Project 81718806

QC - Lead

Date Samples () received () collected by General Testing

(mg/l. unless stated otherwise)

P.O. # _____

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

David H. Berner

Laboratory Director

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. 2869 & 2885 Date April 11, 1984

Sample(s) Reference

Soils - Madison Project 81718806
QC - Cadmium

ANALYTICAL RESULTS

P.O. # _____

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

Laboratory Director

*general testing
corporation*

85 Trinity Place
Hackensack, NJ 07601
(201) 488-5242

Job No. 2869 & 2885 Date April 11, 1984

Mr. Brian Elwood
Converse Consultants
91 Roseland Avenue, Box 91
Caldwell, NJ 07006

Sample(s) Reference

Soils - Madison Project 81718806

QC - Copper

Date Samples () received () collected by General Testing

(mg/l unless stated otherwise)

P.O. #

Analytical procedures in accordance with Standard Methods for the Examination of Water and Wastewater, 15th Edition and Methods for Chemical Analysis of Water and Wastes, EPA. (<) indicates lowest detectable concentration with procedure used. Data on quality control performed with above sample(s) is available upon request.

David H. Berner
Laboratory Director

Laboratory Director

INVESTIGATION OF THE
EXTENT AND DISTRIBUTION OF
VOLATILE ORGANIC
PRIORITY POLLUTANTS IN THE
SEDIMENTS OF PRICKETT'S POND

Prepared For
CPS CHEMICAL COMPANY
Old Water Works Road
Old Bridge, New Jersey

APRIL 1984

WE WEHRAN ENGINEERING
Consulting Engineers

**WEHRAN
ENGINEERING**
Consulting Engineers

RECEIVED

May 7, 1984

Mr. Paul Harvey
Senior Environmental Specialist
Central Region Enforcement Element
New Jersey Department of
Environmental Protection
CN-029
Trenton, New Jersey 08625

DIVISION
MS&E

RE: Prickett's Pond Sediment Sampling and Analysis Program
CPS/Madison Industries
Old Bridge, New Jersey
(WE Project No. 02362217 A-1)

Dear Mr. Harvey:

Wehran Engineering is pleased to submit our report entitled "Investigation of the Extent and Distribution of Volatile Organic Priority Pollutants in the Sediments of Prickett's Pond, Old Bridge Township, Middlesex County, New Jersey".

This report, in conjunction with Converse Consultants' "Report on Sediment and Heavy Metals Analysis of Prickett's Pond, Old Bridge Township, New Jersey" should provide the DEP with all of the results obtained during our joint referenced investigation. Wehran was responsible for collection and analysis of volatile organic priority pollutants and Converse was responsible for the collection and analysis of the heavy metals.

If you should have any questions regarding the results or our interpretation of the data, please do not hesitate to call us at (914) 343-0660.

Very truly yours,

WEHRAN ENGINEERING CORPORATION

William G. Soukup
William G. Soukup, P. E.
Senior Geologist

Robert D. Mutch, Jr.
Robert D. Mutch, Jr., P. E.
Senior Vice President

WGS/RDM:ps
Enclosure

cc: B. Elwood
T. Schwartz, Esq.
P. Meisel
W. Bigham, Esq.

INVESTIGATION OF THE
EXTENT AND DISTRIBUTION OF
VOLATILE ORGANIC PRIORITY POLLUTANTS
IN THE SEDIMENTS OF
PRICKETT'S POND
OLD BRIDGE TOWNSHIP
MIDDLESEX COUNTY, NEW JERSEY

Prepared for

CPS CHEMICAL COMPANY
OLD WATER WORKS ROAD
OLD BRIDGE, NEW JERSEY

WE Project No. 02362217

April 1984

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PRICKETT'S POND SEDIMENT SAMPLING PROGRAM

1.0 INTRODUCTION

In May 1983, CPS Chemical and Madison Industries submitted to the New Jersey DEP, a comprehensive plan for remedial action in the Old Bridge Sand aquifer in the vicinity of their respective plants. That plan was subsequently modified as a result of an ongoing dialogue with NJDEP officials (Addendum 1, Addendum 2). The plan modified at the request of NJDEP encompasses a subsurface cut-off wall, a 400 gallon per minute ground-water recovery system, and a relocation of Prickett's Brook. Two other issues remained unresolved pending further study. These are the possible need for pretreatment prior to discharge to the Middlesex County Sewage Authority and the disposition of Prickett's Pond sediments.

In close cooperation with NJDEP, an investigative plan was developed for evaluation of the Prickett's Pond sediments. That plan specified sampling locations, sampling techniques, the type and nature of chemical analyses, and analytical methodologies. The work was carried out jointly by Converse Consultants, representing Madison Industries, and Wehran, representing CPS Chemical. The work was also observed by NJDEP officials.

This report contains the findings of the sediment investigation with respect to the presence of volatile organic priority pollutants. A sister report to this document, prepared by Converse Consultants, contains the findings with regard to heavy metal content of the sediments.

2.0 FIELD METHODS

Eighty-nine sediment samples were collected for volatile organic analysis during an eight-day period, beginning on March 3, 1984. Samples were obtained from brass shelby tubes driven into the pond sediments in accordance with the general procedures described in the report prepared by Converse Consultants (Converse Consultants, 1984). Immediately upon extrusion from the tube, the appropriate sediment intervals were identified,

"trimmed" to the extent possible, and placed in 40 ml, glass vials equipped with teflon-coated septums. All vials were stored on ice and delivered to New York Testing Laboratories, Inc., within the appropriate holding times.

Table 1 is a summary of the sample identification procedure employed in the field and represented in Figures 1 through 4. Each sample location on the pond is identified by a "B", followed by a number corresponding to the chronological order in which they were collected. The "B" has been omitted from the figures to provide sufficient space for the results. Two of the locations, B-19 and B-20, are upgradient of CPS and Madison Industries, and are shown on the insets on Figures 1 through 4. Analytical results from these sampling stations have been included in tabular form on the figures. Each Shelby tube taken at a particular location is given an "S" designation, and each individual sample was given a letter corresponding to the order in which it was collected. Also shown on Table 1 is the depth interval below the sediment surface from which each sample was collected.

3.0 LABORATORY METHODS

Each sample was analyzed for the 33 volatile compounds listed in the laboratory report in Appendix C. New York Testing Laboratories, Inc. (NYT), conducted all the analysis in their Westbury, Long Island laboratory, using EPA Method 8240. A description of the method is contained in Appendix A. NYT also provided information regarding their quality assurance and quality control program which is contained in Appendix B.

4.0 INTERPRETATION OF DATA

As shown on Figures 1 through 4, Prickett's Pond encompasses approximately 4.5 acres and is located about 800 feet west of CPS and Madison Industries property. The surficial aquifer of the Old Bridge Sand is evident throughout the area, especially along the banks of the pond and the Prickett's Brook. The exposed material is coarse-grained, with characteristic rust color staining.

Sediment thickness within the pond was, in general, less than expected (refer to logs, Converse Report). The upper fine-grained, organic layer ranged in thickness from approximately three inches to one foot, with the exception of B-1 which contained over five feet of sediment. Water depth at the sampling locations ranged from one foot to nine feet and was generally clear to slightly turbid.

The results of the laboratory analyses presented in Appendix C are summarized in both tabular form (Tables 2 and 3), and graphically (Figures 1 through 4). The concentration values shown in Table 3 and Figures 1 through 4 represent the sum of the 33 volatile organic priority pollutants for each sample. Concentrations reported as "less than" (refer to Appendix C) were conservatively included in the sum as the detection limit.

Table 2 was constructed to provide an indication of which of the 14 parameters were most prevalent throughout the site. The values shown represent the number of occurrences of each parameter from all 39 samples. Values reported as "less than" the detection limit were omitted from the tabulation. The following 33 volatile organic compounds were tested:

Acrolein	Dichlorodifluoromethane
Acrylonitrile	1,1-Dichloroethane
Benzene	1-2-Dichloroethane
Bromodichloromethane	1,1-Dichloroethylene
Bromoform	Trans-1,2-Dichloroethylene
Bromomethane	1,2-Dichloropropane
Carbon Tetrachloride	1,3-Dichloropropene
Chlorobenzene	Ethylbenzene
Chlorodibromomethane	Methylene Chloride
Chloroethane	1,1,2,2-Tetrachloroethane
2-Chloroethyl vinyl ether	Tetrachloroethylene
Chloroform	Toluene
Chloromethane	1,1,1-Trichloroethane
1,2-Dichlorobenzene	1,1,2-Trichloroethane
1,3-Dichlorobenzene	Trichloroethylene

1,4-Dichlorobenzene

Trichlorofluoromethane

Vinyl Chloride

Of these, only 14 were detected in any of the 89 samples. These include:

Benzene

Chlorobenzene

Chloroform

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,2-Dichloroethane

Trans-1,2-Dichloroethylene

Ethylbenzene

Methylene Chloride

Tetrachloroethylene

Toluene

1,1,1-Trichloroethane

Trichloroethylene

Three of these 14: Chloroform; Trans-1,2-Dichloroethylene; and Tetrachloroethylene were not detected above the detection limit of 10 ppb in any of the samples. Methylene Chloride is the most prevalent of the compounds, occurring in 46 of the 89 samples above the 10 ppb detection limit. The remainder of the parameters occurred in a range from zero to 19 samples throughout the site.

The spatial distribution of total volatile priority pollutants (TVPP) is depicted in Figures 1 through 4. Figure 1 shows the distribution of TVPP in the upper six inches of the Prickett's Pond sediments. Figures 2, 3, and 4 show the levels of TVPP in the 12 to 18 inch, 24 to 36, and 30 to 42 inch intervals within the sediments, respectively. Background levels of TVPP as observed in B-19 and B-20 are generally below detection limits, except for toluene which was found in concentrations of 10 ppb and 18 ppb in samples B-19, S-1A and B.

Several things are evident from a review of the maps. First, TVPP are predominantly found in the upper six and possibly twelve inches of the sediment. Second, the preponderance of TVPP is found within the upper or eastern end of the pond. Third, in the deeper sediments beneath the upper end of Prickett's Pond, the level of TVPP ranges from zero to 1,433 ppb, averaging 179 ppb. As will be described momentarily, it is our belief that

these levels are in fact more representative of ground-water contamination due to the discharge of the ground-water plume in this area than of true sediment contamination.

Two mechanisms exist by which TVPP may have been introduced into the sediments. These mechanisms are:

1. Inflow to Prickett's Pond of contaminated surface waters with subsequent precipitation into the sediments.
2. Migration of contaminated ground waters discharging upward to the pond from the underlying Old Bridge sand aquifer.

Both mechanisms probably played a role to a greater or lesser degree, however, the data suggest that the ground-water inflow mechanism predominates. Several factors point to this conclusion. First, the distribution of TVPP in the sediments is approximately coincident with the area of Prickett's Pond subject to the discharge of the TVPP ground-water contamination plume (Wehran 1983). Second, the highest levels of TVPP are not associated with the accumulation of deltaic sediments at the head of Prickett's Pond, which might be expected if the contaminants were being transported by surface waters. Thirdly, the majority of the TVPP concentrations in the sediment are of such a low magnitude to indicate that the contamination may in fact be ground-water contamination and not sediment or soil contamination in the traditional sense.

It is important to note that in a saturated or partially saturated sediment sample, contaminants found in either the water or the soil phase will be accounted for in the sediment analysis. In a soil with a porosity of 40 percent and a specific gravity of the soil matrix of 2.65, contaminant concentrations in the water phase will result in the sediment analysis having a concentration of 1/4 that observed in the ground water. Therefore, in a saturated sediment sample with the above properties, an apparent sediment concentration of 250 micrograms per kilogram may in fact represent a ground-water contaminant concentration of 1,000 micrograms per liter. Considering that some dewatering of the sediment samples may have

occurred during sampling, particularly in the coarser grained sediments, the ratio of equivalent ground-water concentrations versus sediment concentrations may lie between five and eight, rather than four.

The levels of TVPP in the sediments beneath Prickett's Pond are, for the most part, of such a low magnitude that they may in fact be ground-water contamination expressed as sediment contamination. Employing the factor of five to eight, it is seen that the majority of the sediment concentrations are within the range of the concentrations of the plume of ground-water contamination discharging into Prickett's Pond (Wehran 1983). Higher values of TVPP concentrations in sediments are probably indicative of a combination of ground-water borne contaminants and true sediment contamination. The higher sediment concentrations were found principally in the organic sediments and are probably the result of partitioning of the ground-water borne contaminants from the water phase to the sediment phase. The blanket of organic sediments may be quite effective in absorbing hydrophobic volatile priority pollutants from the upwelling ground water of the plume. Sorption of hydrophobic hydrocarbons by organic sediments is well documented (Karickhoff 1979). Much of the volatile organics in the discharging ground-water likely volatilizes once entering the pond.

An evaluation of the results has also been conducted in terms of the amount (pounds) of TVPP present within the sediments of Prickett's Pond. To this end, calculations were made using the following formula.

$$\text{Amount of TVPP} = \frac{V_s \times D_d \times C}{1.0 \times 10^9}$$

(pounds)

where:

V_s = volume of soil

D_d = dry density of soil

C = concentration of TVPP in ppb

Calculations were made for each of the first four depth intervals and prorated for the spacial distribution of concentration in accordance with

Figures 1 through 4. The four intervals from which no samples were taken (6 to 12 inch, 18 to 24 inch, 30 to 36 inch, and 42 to 48 inch) were conservatively assigned values equal to the overlying six inch layer. Based on these assumptions, approximately 10.5 pounds of TVPP are contained in the upper four feet of pond sediment.

5.0 CONCLUSIONS

1. Eighty nine sediment samples were collected and analyzed for 33 volatile organic compounds. Only 14 of these compounds were detected at the site, three of which were not found above the detection limit of 10 ppb.
2. Most of the volatile organic priority pollutants are found in the upper six inches and possibly twelve inches of the sediments, and are predominantly confined to the eastern end of Prickett's Pond.
3. Of the 33 volatile organic compounds tested, methylene chloride was most prevalent in the sediment samples.
4. In no case did the concentration of any specific volatile priority pollutant exceed 5 parts per million. The highest concentration observed in any of the samples was a concentration of 2,348 parts per billion methylene chloride found in Sample B-13, S-1A. 2.3 ppm
Moreover, the total concentration of volatile priority pollutants did not exceed 10 parts per million in any sample. The highest concentration of total volatile priority pollutants observed was 2.7 ppm 2,737 parts per billion in B-15, S-1A.
5. Integrating the results of all sediment analyses reveals that the total mass of TVPP in the sediments is approximately 10.5 pounds.
6. The levels and distribution of total volatile priority pollutants strongly suggests that the major mechanism accounting for their presence in the sediment is the upward discharge of ground water from the adjacent and underlying Old Bridge Sand aquifer. Concentrations suggest that the volatile priority pollutants are largely borne by the discharging ground-water with some slight partitioning to the sediments.

7. Neither the concentration nor total mass of total volatile priority pollutants in the sediments warrant dredging and off-site disposal. The proposed remedial plan which involves the Prickett's Pond cut-off wall and recovery wells would control further migration of the contaminants and allow for a controlled recovery of the contaminants in the sediments and the surrounding ground water.

TABLE 1
SUMMARY OF SAMPLE IDENTIFICATION

<u>Sample Location</u>	<u>Shelby Tube Number</u>	<u>Sample Designations</u>	<u>Interval Depth Code</u>	<u>Date Collected (1984)</u>
B-1	S-1	A,B	1,2	3-8
	S-2	A,B	5,6	3-8
B-2	S-1	A,B,C	1,2,3	3-12
B-3	S-1	A,B,C,D	1,2,3,4	3-12
B-4	S-1	A,B,C,D	1,2,3,4	3-12
B-5	S-1	A,B,C,D	1,2,3,4	3-12
B-6	S-1	A,B,C	1,2,3	3-12
B-7	S-1	A,B,C,D	1,2,3,4	3-14
	S-2	A,B	6,7	3-14
B-8	S-1	A,B,C,D	1,2,3,4	3-14
B-9	S-1	A,B,C,D	1,2,3,4	3-14
B-10	S-1	A,B,C,D	1,2,3,4	3-14
B-11	S-1	A,B,C,D	1,2,3,4	3-14
B-12	S-1	A,B,C,D	1,2,3,4	3-15
B-13	S-1	A,B,C,D	1,2,3,4	3-15
B-14	S-1	A,B,C,D	1,2,3,4	3-15
	S-2	A,B	6,7	3-15
B-15	S-1	A,B,C	1,2,3	3-15
	S-2	A,B,C	4,5,6	3-15
B-16	S-1	A,B,C	1,2,3	3-16
	S-2	A,B	4,5	3-16
B-17	S-1	A,B	1,2	3-16
B-17A	S-1	A,B,C,D	1,2,3,4	3-16
B-18	S-1	A,B,C,D	1,2,3,4	3-16
	S-2	A,B,C	6,7,8	3-16
B-19	S-1	A,B,C	1,2,3	3-16
B-20	S-1	A,B,C,D	1,2,3,4	3-16

TABLE 1 (Page 2)
INTERVAL DEPTH CODE

Code	Depth below Sediment Surface (inches/feet)	
1	0 - 6	0 - .5
2	12 - 18	1 - 1.5
3	24 - 30	2 - 2.5
4	36 - 42	3 - 3.5
5	48 - 54	4 - 4.5
6	60 - 66	5 - 5.5
7	72 - 78	6 - 6.5
8	84 - 96	7 - 7.5

TABLE 2

NUMBER OF OCCURRENCES FOR SPECIFIC VOLATILE ORGANIC PARAMETERS

¹ Parameter	² Sum per 89 samples
Benzene	12
Chlorobenzene	15
Chloroform	0
1,2-Dichlorobenzene	8
1,3-Dichlorobenzene	5
1,4-Dichlorobenzene	19
1,2-Dichloroethane	17
Trans-1,2-Dichloroethylene	0
Ethylbenzene	7
Methylene Chloride	46
Tetrachloroethylene	0
Toluene	19
1,1,1-Trichloroethane	15
Trichloroethylene	14

¹The remaining 19 parameters were "not detected" in any of the 89 samples.

²Values reported as "less than" detection limit were omitted from sum.

TABLE 3

**SUMMARY OF TVPP CONCENTRATIONS
PER SAMPLING DEPTH INTERVAL**

POND SEDIMENTS

<u>Sample Location</u>	<u>0-6"</u>	<u>12-18"</u>	<u>24-30"</u>	<u>36-42"</u>	<u>48-54"</u>	<u>60-66"</u>
B-1	191	228	--	--	65	37
B-2	74	33	100	--	--	--
B-3	69	10	69	30	--	--
B-4	20	10	21	40	--	--
B-5	45	33	44	140	--	--
B-6	12	0	10	--	--	--
B-7	168	318	50	20	--	10
B-8	1,907	20	30	65	--	--
B-9	391	31	52	108	--	--
B-10	1,048	263	203	185	--	--
B-11	589	395	205	116	--	--
B-12	372	146	72	448	--	--
B-13	+2379	0	93	81	--	--
B-14	919	180	120	418	--	1,433
B-15	2,737	396	20	211	77	128

STREAM SEDIMENTS

(Downgradient of CPS/Madison)

B-16	412	1,743	1,941	951	683	--
B-17	580	32	--	--	--	--
B-17A	147	191	163	1,673	--	--
B-18	1,676	780	714	112	--	85

(Upgradient of CPS/Madison)

B-19	20	11	20	--	--	--
B-20	20	10	20	20	--	--

REFERENCES

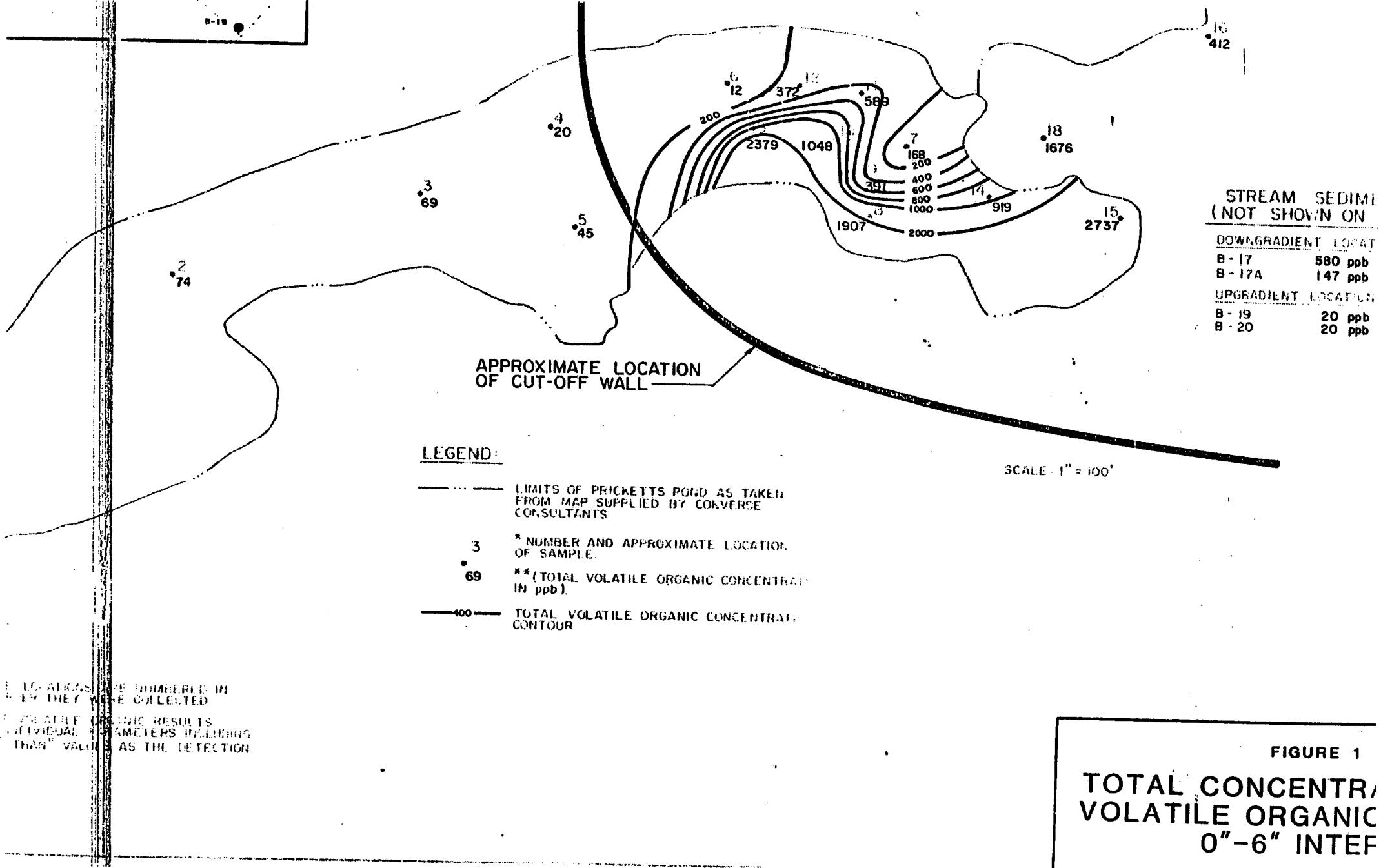
Karickhoff, S. W., Brown, D. S., and Scott, T. A., 1979, Water Resources 13, 241.

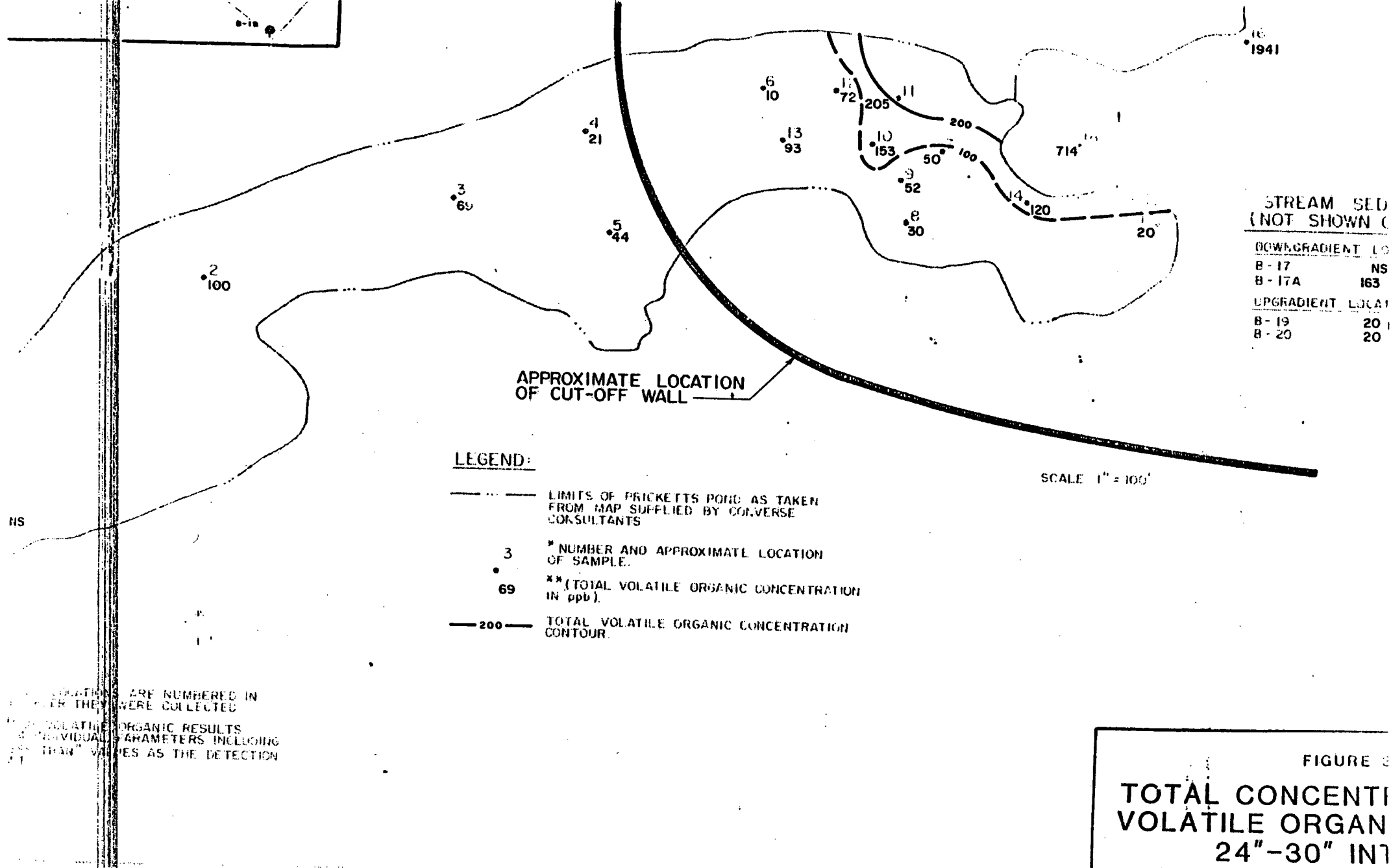
Wehran Engineering, May 1983. "Recommended Remedial Program for Abatement of Ground-Water Contamination of the Old Bridge Sand Aquifer in the Vicinity of CPS and Madison Industries, Old Bridge Township, Middlesex County, New Jersey".

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Converse Consultants, April 1984. "Report, Sediment and Heavy Metals Analysis, Pricketts Pond, Old Bridge Township, New Jersey.





LOCATIONS ARE NUMBERED IN ORDER THEY WERE COLLECTED

1. VOLATILE ORGANIC RESULTS INDIVIDUAL PARAMETERS INCLUDING "THAN" VALUES AS THE DETECTION

